



**PATENT**  
Attorney Docket No. 400396

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

CHANG et al.

Application No.: 09/416,270

Art Unit: 1745

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Examiner: T. Dove

For: LITHIUM POLYMER  
BATTERY

**CLAIMS PENDING AFTER AMENDMENT IN  
RESPONSE TO THE OFFICIAL ACTION MAILED MARCH 12, 2001**

1. A lithium polymer battery comprising:

a positive plate including a positive collector comprising a metal having a plurality of openings and a positive active material layer on at least one surface of the positive collector;

a negative plate including a negative collector comprising a metal foil free of holes, and a negative active material layer on at least one surface of the negative collector; and

a separator located between the positive and negative plates, for insulating the positive and negative plates from each other.

2. The lithium polymer battery of claim 1, wherein the negative collector is a copper foil.

3. The lithium polymer battery of claim 1, wherein the positive collector is expanded metal.

4. The lithium polymer battery of claim 2, wherein the positive and negative active material layers are coatings of positive and negative active material slurries, respectively, on at least one surface of the positive collector and at least one surface of the

negative collector, respectively.

5. The lithium polymer battery of claim 1, wherein the positive collector is punched metal.

6. The lithium polymer battery of claim 1, wherein the positive plate includes the positive active material layer on both sides of the positive collector and the negative plate includes the negative active material layer on both sides of the negative collector.

7. A lithium polymer battery comprising:

a positive plate including a positive collector comprising a metal having a plurality of openings and a positive active material layer on at least one surface of the positive collector;

a negative plate including a negative collector consisting of a metal foil free of holes, and a negative active material layer on at least one surface of the negative collector; and

a separator located between the positive and negative plates, for insulating the positive and negative plates from each other.

8. The lithium polymer battery of claim 7, wherein the negative collector is a copper foil.

9. The lithium polymer battery of claim 7, wherein the positive collector is expanded metal.

10. The lithium polymer battery of claim 7, wherein the positive collector is punched metal.

11. The lithium polymer battery of claim 7, wherein the positive and negative active material layers are coatings of positive and negative active material slurries, respectively, on at least one surface of the positive collector and at least one surface of the

negative collector, respectively.

12. (New) The lithium polymer battery of claim 7, wherein the positive plate includes the positive active material layer on both sides of the positive collector and the negative plate includes the negative active material layer on both sides of the negative collector.

13. A lithium polymer battery comprising a plurality of bi-cells stacked on each other wherein each bi-cell comprises

a positive plate including a positive collector comprising a metal having a plurality of openings, a positive active material layer on both surfaces of the positive collector, and a positive tap electrically connected to the positive collector;

a negative plate including a negative collector comprising a metal foil free of holes, a negative active material layer on both surfaces of the negative collector, and a negative tap electrically connected to the negative collector; and

a separator located between the positive and negative plates, for insulating the positive and negative plates from each other, wherein the positive taps of the bi-cells are connected together as a first terminal of the battery and the negative taps of the bi-cells are connected together as a second terminal of the battery.

14. The lithium polymer battery of claim 13, wherein the negative collector is a copper foil.

15. A lithium polymer battery comprising a plurality of bi-cells stacked on each other wherein each bi-cell comprises

a positive plate including a positive collector comprising a metal having a plurality of openings, a positive active material layer on both surfaces of the positive collector, and a positive tap electrically connected to the positive collector;

a negative plate including a negative collector consisting of a metal foil free of holes, a negative active material layer on both surfaces of the negative collector, and a negative tap electrically connected to the negative collector; and

a separator located between the positive and negative plates, for insulating the positive and negative plates from each other, wherein the positive taps of the bi-cells are connected together as a first terminal of the battery and the negative taps of the bi-cells are connected together as a second terminal of the battery.

16. The lithium polymer battery of claim 15, wherein the negative collector is a copper foil.

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